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(54) Title: IMPROVEMENTS IN OR RELATING TO CONSTANT CURRENT TYPE POWER SUPPLIES

(57) **Abstract:** Constant current power supply arrangements can charge a capacitor with a constant current and are suitable as power supplies for laser diodes. A power supply for a laser diode comprises: a variable voltage power supply, a load path for carrying a laser diode, a shunt path connected in parallel with the load path, a current draining element for switching the shunt path, the current draining element being associated via a first feedback element with the variable voltage power supply such that current drained by the current draining element provides first feedback control of a voltage level of the variable voltage power supply, and a voltage operated second feedback element associated with both the load path and the shunt path to provide second feedback control of the current draining element to drain current via the current draining element in response to current changes at the load. A circuit arrangement for charging a capacitance comprises a load capacitance to be charged, a serially connected inductive component contributing to a serial frequency dependent impedance, and a variable frequency source for supplying charging current at a variable frequency, the variable frequency source being controllable to reduce frequency during charging of the capacitor, thereby to reduce the frequency dependent impedance and maintain a constant level of charging current to the load capacitance.